

Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025

Fifth Semester

Chemical Engineering

CH3005 – Petrochemical Technology

Regulations - 2021

Duration : 3 Hrs

Maximum : 100 Marks

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

<i>Q.No</i>	<i>Questions</i>	<i>BTL</i>	<i>CO</i>	<i>Marks</i>
1.	Define a Petrochemical Complex and list two of its key characteristics.	L2	1	2
2.	What is meant by feedstock selection in the petrochemical industry? Give one example.	L1	1	2
3.	Name the two primary sources for the production of basic petrochemical intermediates.	L1	2	2
4.	Differentiate between steam cracking and catalytic reforming in terms of their primary products.	L2	2	2
5.	List the main raw materials required for the production of Vinyl Chloride Monomer.	L1	3	2
6.	Explain the significance of the yield pattern in a petrochemical process.	L2	3	2
7.	What are the major differences between Low-Density Polyethylene and High-Density Polyethylene in terms of their production process and properties?	L1	4	2
8.	Define the term copolymer and give one example from the syllabus.	L2	4	2
9.	Give the role of additives in lubricants.	L1	5	2
10.	How are petrochemicals used in the production of fertilizers? Name one key petrochemical-derived fertilizer?	L2	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)*

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Explain the economic factors that influence the growth of the petrochemical industry.	L2	1	16
	Or			
	b Describe the typical structure of an integrated petrochemical complex with a neat block diagram. Give the advantages of such integration with a refinery in terms of cost-effectiveness and resource utilization.	L2	1	16
12.	a Describe the production of synthesis gas and list three important chemicals derived from it.	L2	2	16
	Or			
	b Outline the process for the production of Benzene from petroleum sources.	L2	2	16

13.	a	Explain the process flow for the production of Ethylene Glycol, highlighting its major application.	L2	3	16
		Or			
	b	Discuss the importance of process variables in the production of a complex petrochemical like Acrylonitrile.	L2	3	16
14.	a	How the molecular structure of Polyethylene, produced via different catalytic processes, determines its final properties and applications? Justify why HDPE is preferred for making milk jugs while LDPE is used for plastic bags.	L4	4	16
		Or			
	b	How the addition of plasticizers in PVC formulations alters its properties, making it suitable for applications ranging from rigid pipes to flexible shower curtains?	L4	4	16
15.	a	Exemplify the following petrochemicals: i. Additives ii. Electronic chemicals iii. Agrochemicals iv. Adhesives	L5	5	16
		Or			
	b	Analyse why natural gas is a crucial raw material for making fertilizers. What are the main steps to produce Urea fertilizer from natural gas?	L5	5	16